A critical evaluation, challenges, and future perspectives of using artificial intelligence and emerging technologies in smart classrooms

Abstract

The term "Smart Classroom" has evolved over time and nowadays reflects the technological advancements incorporated in educational spaces. The rapid advances in technology, and the need to create more efficient and creative classes that support both in-class and remote activities, have led to the integration of Artificial Intelligence and smart technologies in smart classes. In this paper we discuss the concept of Artificial Intelligence in Education and present a literature review related to smart classroom technology, with an emphasis on emerging technologies such as AI-related technologies. As part of this survey key technologies related to smart classes used for effective class management that enhance the convenience of classroom environments, the use of different types of smart teaching aids during the educational process and the use of automated performance assessment technologies are presented. Apart from discussing a variety of technological accomplishments in each of the aforementioned areas, the role of AI is discussed, allowing the readers to comprehend the importance of AI in key technologies related to smart classes. Furthermore, through a SWOT analysis, the Strengths, Weaknesses, Opportunities, and Threats of adopting AI in smart classes are presented, while the future perspectives and challenges in utilizing AI-based techniques in smart classes are discussed. This survey targets educators and AI professionals so that the former get informed about the potential, and limitations of AI in education, while the latter can get inspiration from the challenges and peculiarities of educational AI-based systems.